

## Module 1 - Introduction

ME3023 - Measurements in Mechanical Systems

Mechanical Engineering  
Tennessee Technological University

### Topic 3 - Experimental Test Plan

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- Parameter Design Plan
- System and Tolerance Design Plan
- Data Reduction Design Plan
- Experimental Design Strategies

# Parameter design plan

**Parameter Design Plan:** Determine the test objective and identify the process variables and parameters and a means for their control.

Ask: What question am I trying to answer? What needs to be measured? What variables and parameters will affect my results?

Text: Theory and Design of Mech. Meas.

# System and tolerance design plan

**System and Tolerance Design Plan:** Select a measurement technique, equipment, and test procedure based on some preconceived tolerance limits for error.

Ask: In what ways can I do the measurement and how good do the results need to be to answer my question?

Text: Theory and Design of Mech. Meas.

# Data reduction design plan

**Data Reduction Design Plan:** Plan how to analyze, present, and use the anticipated data.

Ask: How will I interpret the resulting data? How will I use the data to answer my question? How good is my answer? Does my answer make sense?

Text: Theory and Design of Mech. Meas.

# Experimental Design Strategies

- Randomized Tests
- Repetition and Replication.
- Concomitant Methods